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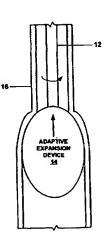
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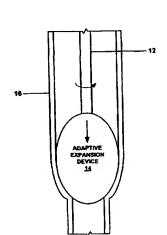
of inventorship (Rule 4.17(iv)) for US only

[Continued on next page]

(54) Title: APPARATUS AND METHOD FOR RADIALLY EXPANDING A WELLBORE CASING USING AN ADAPTIVE **EXPANSION SYSTEM** 







(57) Abstract: An apparatus and method for radially expanding a wellbore (34) using an adaptive expansion device (14).

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#### INTERNATIONAL SEARCH REPORT

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B. FIELDS SEARCHED								
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Documentation	n searched other than minimum documentation to the ex	xtent that such docum	nents are included in	the fields searched				
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C. DOCU	IMENTS CONSIDERED TO BE RELEVANT							
Category •	Citation of document, with indication, where ap	propriate, of the relev	ant passages	Relevant to claim No.				
Т	US 6,722,427 B2 (GANO et al) 20 April 2004 (20.04.	2004), claims 10, 25,	, and 29.	13-18				
т	US 2004/0065446 A1 (TRAN et al) 08 April 2004 (08 [0057].	3.04.2004), paragraph	13-18					
X, P	US 6,688,397 B2 (MCCLURKIN et al) 10 February 2004 (10.02.2004), column 6, lines 40-			13-18				
Α	US 5,253,713 A (GREGG et al) 19 October 1993 (19. lines 57-66.	10.1993), Figures 3 a	and 6-8, column 6,	1-3				
A	US 5,749,585 A (LEMBCKE) 12 May 1998 (12.05.1998), column 1, lines 45-55 and column 3, line 55 through column 4, line 8.			1-3				
Α	US 5,282,508 A (ELLINGSEN et al) 01 February 1994 (01.02.1994), column 19, lines 47-50			4-6				
A	and claim 7. US 6,012,521 A (ZUNKEL et al) 11 January 2000 (11.01.2000), column 13, lines 44-51.			4-6				
Further	documents are listed in the continuation of Box C.	See paten	t family annex.					
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Continuation of B. FIELDS SEARCHED Item 3:	
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